

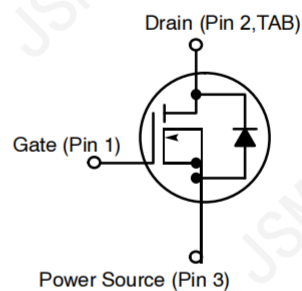
Features

- Surface-mounted package
- Advanced trench cell design
- Extremely low threshold voltage
- ESD protected (HBM > 2KV)



Quick reference

- $BV \geq 60\text{ V}$
- $P_{tot} \leq 0.83\text{ W}$
- $I_D \leq 0.5\text{ A}$
- $R_{DS(ON)} \leq 3\ \Omega @ V_{GS} = 10\text{ V}$
- $R_{DS(ON)} \leq 4\ \Omega @ V_{GS} = 4.5\text{ V}$



Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	60 V	
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	$\pm 20\text{ V}$	
I_D^*	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	0.5 A	
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1.7 A	
P_{tot}^*	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	0.83	W
		$T_A = 100\text{ }^\circ\text{C}$	-	0.33	
T_{stg}	Storage Temperature - 55 150				$^\circ\text{C}$
T_J	Junction Temperature - 150				$^\circ\text{C}$
I_S^*	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	0.4 A	
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient - 150				$^\circ\text{C} / \text{W}$

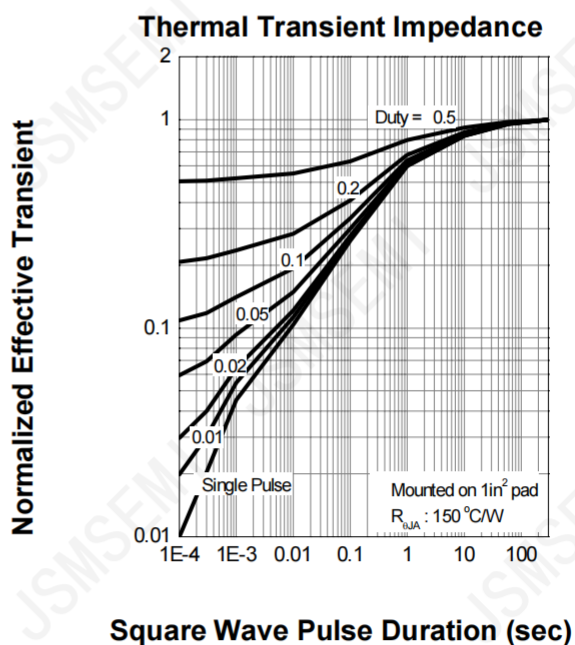
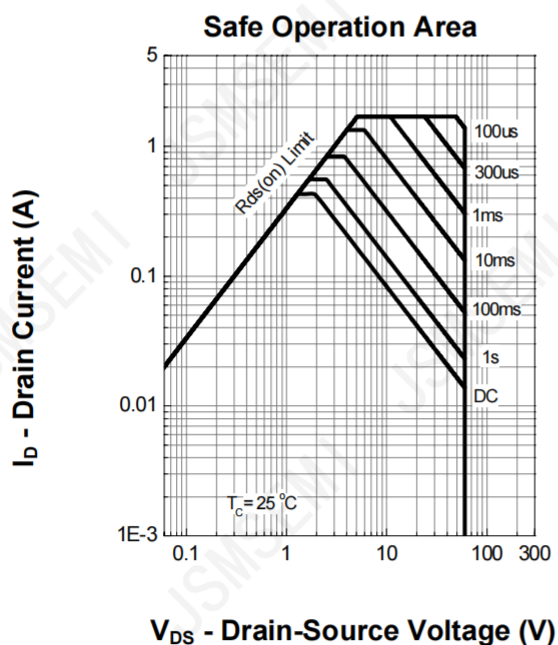
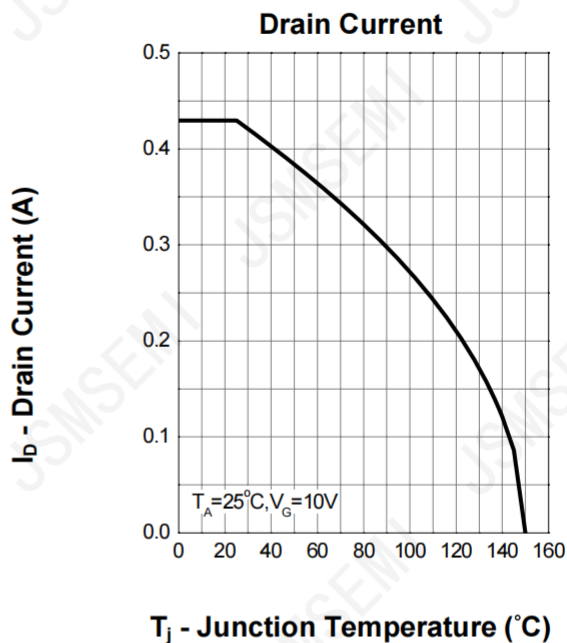
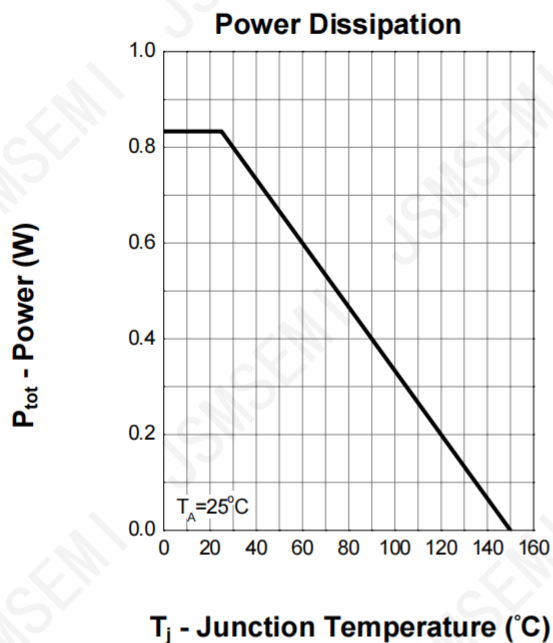
Notes: * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$ ** Pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

Electrical Characteristics ($T_A = 25\text{ }^{\circ}\text{C}$ Unless Otherwise Noted)

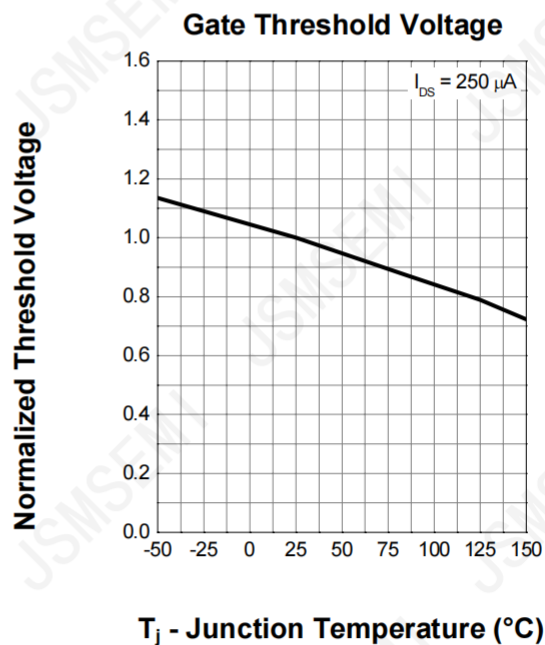
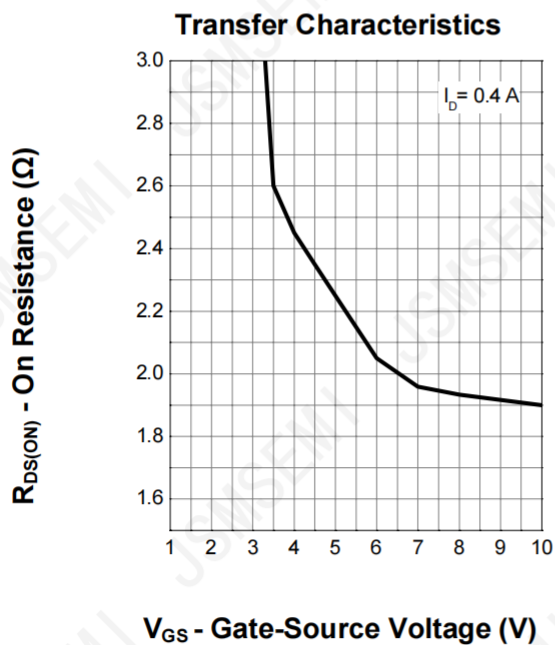
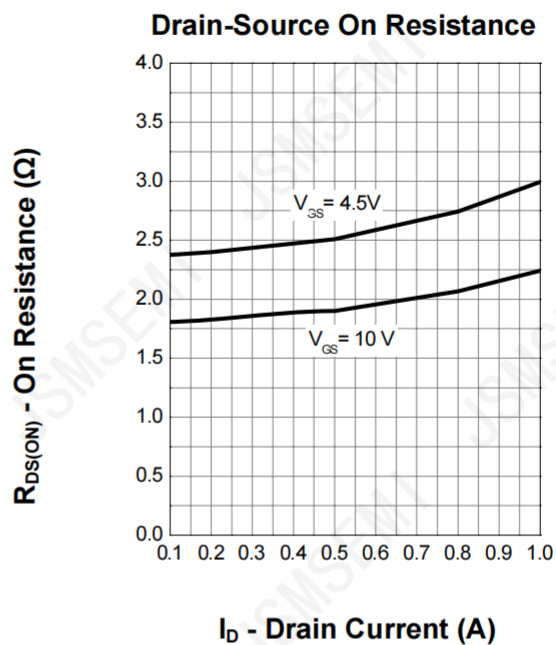
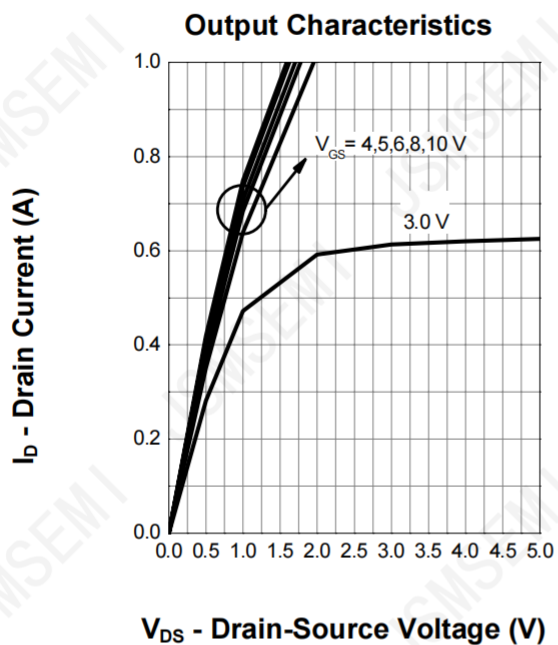
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	60	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	1.0	1.6	2.5	V
I _{DSS}	Drain Leakage Current	V _{DS} = 48 V, V _{GS} = 0 V	-	-	1	μA
		T _J = 85 °C	-	-	30	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	-	-	± 10	μA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 0.4 A		1.9	3.0	Ω
		V _{GS} = 4.5 V, I _{DS} = 0.3 A	-	2.4	4.0	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 0.4 A, V _{GS} = 0 V	-	0.7	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} = 0.4 A, dI _{SD} / dt = 100 A / μs	-	40	-	ns
Q _{rr}	Reverse Recovery Charge		-	40	-	nC
Dynamic Characteristics ^b						
R _G	Gate Resistance	V _{GS} = V _{DS} = 0 V, F = 1 MHz	-	130	-	Ω
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 25 V Frequency = 1 MHz	-	30	-	pF
C _{oss}	Output Capacitance		-	4.2	-	
C _{rss}	Reverse Transfer Capacitance		-	3	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 30 V, V _{GEN} = 10 V, R _G = 25 Ω, R _L = 150 Ω, I _{DS} = 0.2 A	-	3.9	9	ns
t _r	Turn-on Rise Time		-	3.5	8	
t _{d(off)}	Turn-off Delay Time		-	16	40	
t _f	Turn-off Fall Time		-	10	20	
Q _g	Total Gate Charge	V _{GS} = 4.5 V, V _{DS} = 10 V, I _{DS} = 0.4 A	-	305	-	pC
Q _{gs}	Gate-Source Charge		-	85	-	
Q _{gd}	Gate-Drain Charge		-	205	-	

Notes : a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$ b : Guaranteed by design, not subject to production testing

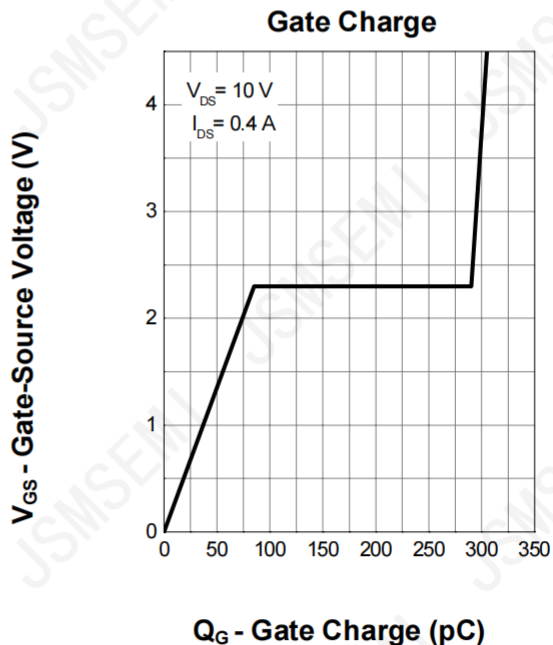
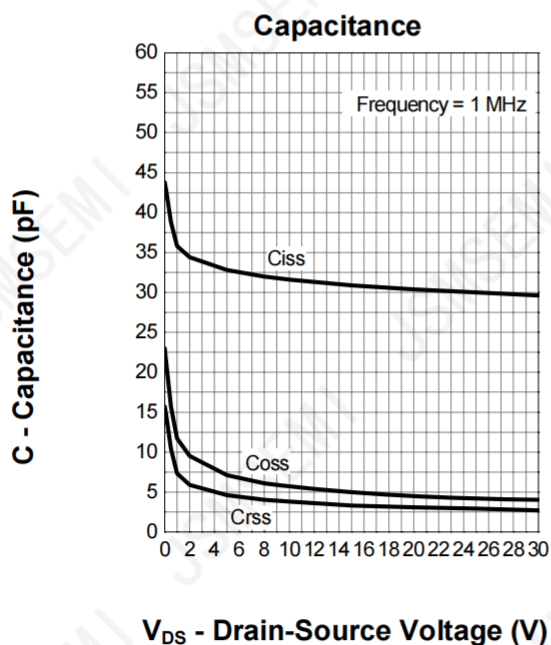
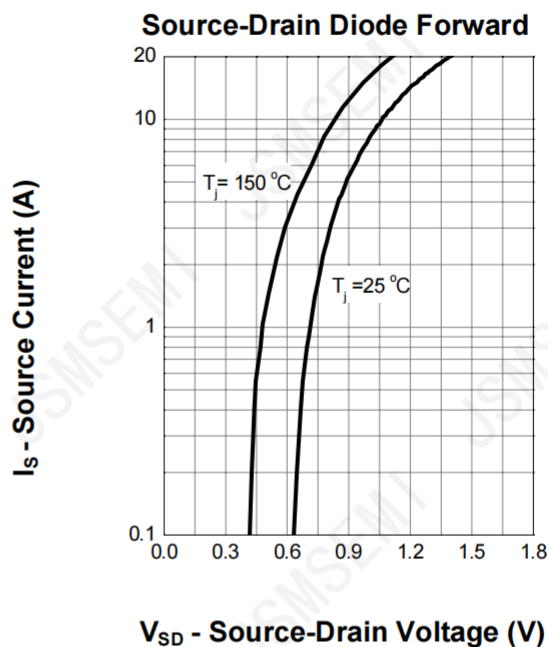
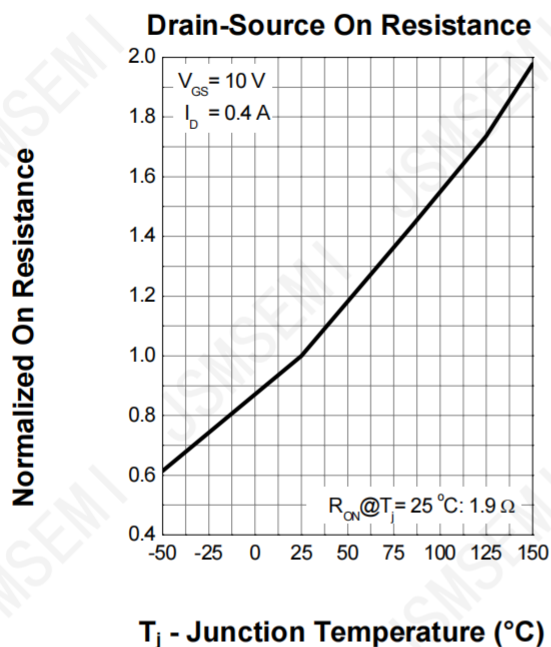
Typical Characteristics



Typical Characteristics (cont.)

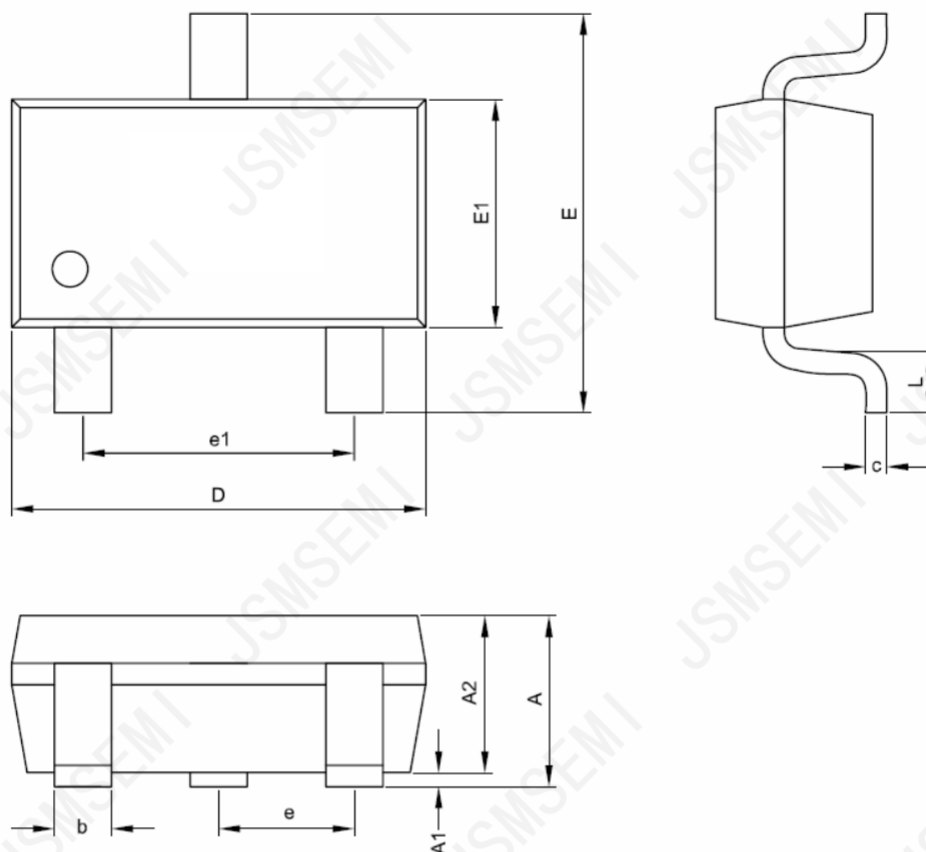


Typical Characteristics (cont.)



Package Dimensions

SOT-23



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	—	1.12
A1	0.00	0.1
A2	0.90	1.02
D	2.90 BSC	
E	2.40 BSC	
E1	1.20	1.40
c	0.08	0.25
b	0.30	0.50
e	0.95 BSC	
e1	1.90 BSC	
L	0.20	0.60

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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